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What is claimed is:

1. A method for producing a binderless phosphor screen comprising the steps of :
  - depositing a photostimulable phosphor on a substrate forming a phosphor layer with phosphor needles and voids between them,
  - applying a solution of polymeric compounds selected from the group consisting of silazane and siloxazane type polymeric compounds, mixtures thereof and mixtures of said silazane or siloxazane type polymeric compounds with compatible polymeric compounds, on said vapor deposited phosphor as a surface layer,
  - optionally wiping the excess of said solution from said phosphor layer and
  - drying said phosphor screen.
2. A method according to claim 1, wherein said photostimulable phosphor is a CsX:Eu stimuable phosphor, X being selected from the group consisting of Cl, Br and combinations thereof, deposited from a heatable container with said CsX:Eu phosphor, together with the substrate in a deposition chamber that is evacuated to at least  $10^{-1}$  mbar.
3. A method according to claim 1, wherein said step of depositing proceeds by a method selected from the group consisting of physical vapor deposition, chemical vapor deposition or atomization technique, thereby forming a vapor deposited phosphor layer with needle-shaped phosphor crystals.
4. A method according to claim 2, wherein said step of depositing proceeds by a method selected from the group consisting of physical vapor deposition, chemical vapor deposition or atomization technique, thereby forming a vapor deposited phosphor layer with needle-shaped phosphor crystals.

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5. A method according to claim 1, wherein an additional step of applying at least one colorant in said voids is performed before said step of applying a solution of the said polymeric compounds.
6. A method according to claim 2, wherein an additional step of  
5 applying at least one colorant in said voids is performed before said step of applying a solution of the said polymeric compounds.
7. A method according to claim 3, wherein an additional step of applying at least one colorant in said voids is performed before said step of applying a solution of the said polymeric compounds.
- 10 8. A method according to claim 4, wherein an additional step of applying at least one colorant in said voids is performed before said step of applying a solution of the said polymeric compounds.
9. A method according to claim 1, wherein, in said step of applying a solution of the said polymeric compounds on said vapor deposited  
15 phosphor, a solution of a polymer is used further comprising at least one colorant.
10. A method according to claim 2, wherein, in said step of applying a solution of the said polymeric compounds on said vapor deposited phosphor, a solution of a polymer is used further comprising at  
20 least one colorant.
11. A method according to claim 3, wherein, in said step of applying a solution of the said polymeric compounds on said vapor deposited phosphor, a solution of a polymer is used further comprising at least one colorant.
- 25 12. A method according to claim 4, wherein, in said step of applying a solution of the said polymeric compounds on said vapor deposited

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phosphor, a solution of a polymer is used further comprising at least one colorant.

13. A method according to claim 5, wherein, in said step of applying a solution of the said polymeric compounds on said vapor deposited phosphor, a solution of a polymer is used further comprising at least one colorant.

14. A method according to claim 6, wherein, in said step of applying a solution of the said polymeric compounds on said vapor deposited phosphor, a solution of a polymer is used further comprising at least one colorant.

15. A method according to claim 7, wherein, in said step of applying a solution of the said polymeric compounds on said vapor deposited phosphor, a solution of a polymer is used further comprising at least one colorant.

16. A method according to claim 8, wherein, in said step of applying a solution of the said polymeric compounds on said vapor deposited phosphor, a solution of a polymer is used further comprising at least one colorant.

17. A method according to claim 9, wherein an additional step of applying at least one colorant in said voids is performed before said step of applying a solution of the said polymeric compounds on said vapor deposited phosphor.

18. A method according to claim 10, wherein an additional step of applying at least one colorant in said voids is performed before said step of applying a solution of the said polymeric compounds on said vapor deposited phosphor.

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19. A method according to claim 11, wherein an additional step of applying at least one colorant in said voids is performed before said step of applying a solution of the said polymeric compounds on said vapor deposited phosphor.

5 20. A method according to claim 12, wherein an additional step of applying at least one colorant in said voids is performed before said step of applying a solution of the said polymeric compounds on said vapor deposited phosphor.

10 21. A method according to claim 13, wherein an additional step of applying at least one colorant in said voids is performed before said step of applying a solution of the said polymeric compounds on said vapor deposited phosphor.

15 22. A method according to claim 14, wherein an additional step of applying at least one colorant in said voids is performed before said step of applying a solution of the said polymeric compounds on said vapor deposited phosphor.

20 23. A method according to claim 15, wherein an additional step of applying at least one colorant in said voids is performed before said step of applying a solution of the said polymeric compounds on said vapor deposited phosphor.

24. A method according to claim 16, wherein an additional step of applying at least one colorant in said voids is performed before said step of applying a solution of the said polymeric compounds on said vapor deposited phosphor.

25 25. A method according to claim 1, wherein said solution of compatible polymeric compounds is selected from the group consisting of vinyl resins comprising moieties derived from esters of acrylic acid in ethylacetate, vinyl resins comprising moieties derived from esters

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of methacrylic acid in ethylacetate, a thermoplastic rubber in a mixture of ethylacetate and toluene, urethanes or urethaneacrylates in ketones, melamine-resins in a mixture of ketones and ethylacetate, and diamine-hardened or isocyanate-hardened elastomers in ketones.

26. A method according to claim 5, wherein said solution of compatible polymeric compounds is selected from the group consisting of vinyl resins comprising moieties derived from esters of acrylic acid in ethylacetate, vinyl resins comprising moieties derived from esters of methacrylic acid in ethylacetate, a thermoplastic rubber in a mixture of ethylacetate and toluene, urethanes or urethaneacrylates in ketones, melamine-resins in a mixture of ketones and ethylacetate, and diamine-hardened or isocyanate-hardened elastomers in ketones.

27. A method according to claim 9, wherein said solution of compatible polymeric compounds is selected from the group consisting of vinyl resins comprising moieties derived from esters of acrylic acid in ethylacetate, vinyl resins comprising moieties derived from esters of methacrylic acid in ethylacetate, a thermoplastic rubber in a mixture of ethylacetate and toluene, urethanes or urethaneacrylates in ketones, melamine-resins in a mixture of ketones and ethylacetate, and diamine-hardened or isocyanate-hardened elastomers in ketones.

28. A method according to claim 17, wherein said solution of compatible polymeric compounds is selected from the group consisting of vinyl resins comprising moieties derived from esters of acrylic acid in ethylacetate, vinyl resins comprising moieties derived from esters of methacrylic acid in ethylacetate, a thermoplastic rubber in a mixture of ethylacetate and toluene, urethanes or urethaneacrylates in ketones, melamine-resins in a mixture of ketones and ethylacetate, and diamine-hardened or isocyanate-hardened elastomers in ketones.

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29. Method according to claim 1, wherein said voids are filled over a length of at least 5  $\mu\text{m}$ .

30. Method according to claim 2, wherein said voids are filled over a length of at least 5  $\mu\text{m}$ .

5 31. Method according to claim 3, wherein said voids are filled over a length of at least 5  $\mu\text{m}$ .

32. Method according to claim 4, wherein said voids are filled over a length of at least 5  $\mu\text{m}$ .

10 33. Method according to claim 5, wherein said voids are filled over a length of at least 5  $\mu\text{m}$ .

34. Method according to claim 9, wherein said voids are filled over a length of at least 5  $\mu\text{m}$ .

35. Method according to claim 17, wherein said voids are filled over a length of at least 5  $\mu\text{m}$ .

15 36. Method according to claim 25, wherein said voids are filled over a length of at least 5  $\mu\text{m}$ .

37. Method according to claim 26, wherein said voids are filled over a length of at least 5  $\mu\text{m}$ .

20 38. Method according to claim 27, wherein said voids are filled over a length of at least 5  $\mu\text{m}$ .

39. Method according to claim 28, wherein said voids are filled over a length of at least 5  $\mu\text{m}$ .

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40. Method according to claim 1, wherein Taber abrasion tests applied to a surface layer of said binderless phosphor screen by making use of a Teledyne Taber 5130 Abraser and with Calibrase CS10F elements, sandpaper P220 and a load of 250 g on each element as described in  
5 ASTM D1044, provide a mass loss of said surface layer of not more than 3 mg when measured after 100 cycles.

41. Method according to claim 2, wherein Taber abrasion tests applied to a surface layer of said binderless phosphor screen by making use of a Teledyne Taber 5130 Abraser and with Calibrase CS10F elements,  
10 sandpaper P220 and a load of 250 g on each element as described in ASTM D1044, provide a mass loss of said surface layer of not more than 3 mg when measured after 100 cycles.

42. Method according to claim 3, wherein Taber abrasion tests applied to a surface layer of said binderless phosphor screen by making use  
15 of a Teledyne Taber 5130 Abraser and with Calibrase CS10F elements, sandpaper P220 and a load of 250 g on each element as described in ASTM D1044, provide a mass loss of said surface layer of not more than 3 mg when measured after 100 cycles.

43. Method according to claim 4, wherein Taber abrasion tests applied  
20 to a surface layer of said binderless phosphor screen by making use of a Teledyne Taber 5130 Abraser and with Calibrase CS10F elements, sandpaper P220 and a load of 250 g on each element as described in ASTM D1044, provide a mass loss of said surface layer of not more than 3 mg when measured after 100 cycles.

44. Method according to claim 5, wherein Taber abrasion tests applied  
25 to a surface layer of said binderless phosphor screen by making use of a Teledyne Taber 5130 Abraser and with Calibrase CS10F elements, sandpaper P220 and a load of 250 g on each element as described in ASTM D1044, provide a mass loss of said surface layer of not more  
30 than 3 mg when measured after 100 cycles.

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45. Method according to claim 9, wherein Taber abrasion tests applied to a surface layer of said binderless phosphor screen by making use of a Teledyne Taber 5130 Abraser and with Calibrase CS10F elements, sandpaper P220 and a load of 250 g on each element as described in  
5 ASTM D1044, provide a mass loss of said surface layer of not more than 3 mg when measured after 100 cycles.
46. Method according to claim 17, wherein Taber abrasion tests applied to a surface layer of said binderless phosphor screen by making use of a Teledyne Taber 5130 Abraser and with Calibrase CS10F  
10 elements, sandpaper P220 and a load of 250 g on each element as described in ASTM D1044, provide a mass loss of said surface layer of not more than 3 mg when measured after 100 cycles.
47. Method according to claim 25, wherein Taber abrasion tests applied to a surface layer of said binderless phosphor screen by making use of a Teledyne Taber 5130 Abraser and with Calibrase CS10F  
15 elements, sandpaper P220 and a load of 250 g on each element as described in ASTM D1044, provide a mass loss of said surface layer of not more than 3 mg when measured after 100 cycles.
48. Method according to claim 29, wherein Taber abrasion tests applied to a surface layer of said binderless phosphor screen by making use of a Teledyne Taber 5130 Abraser and with Calibrase CS10F  
20 elements, sandpaper P220 and a load of 250 g on each element as described in ASTM D1044, provide a mass loss of said surface layer of not more than 3 mg when measured after 100 cycles.
49. Method according to claim 1, wherein said phosphor screen comprises a binderless phosphor layer of needle-shaped CsBr:Eu crystals.  
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50. Method according to claim 2, wherein said phosphor screen comprises a binderless phosphor layer of needle-shaped CsBr:Eu crystals.

5 51. Method according to claim 3, wherein said phosphor screen comprises a binderless phosphor layer of needle-shaped CsBr:Eu crystals.

52. Method according to claim 4, wherein said phosphor screen comprises a binderless phosphor layer of needle-shaped CsBr:Eu crystals.

10 53. Method according to claim 5, wherein said phosphor screen comprises a binderless phosphor layer of needle-shaped CsBr:Eu crystals.

15 54. Method according to claim 9, wherein said phosphor screen comprises a binderless phosphor layer of needle-shaped CsBr:Eu crystals.

55. Method according to claim 17, wherein said phosphor screen comprises a binderless phosphor layer of needle-shaped CsBr:Eu crystals.

20 56. Method according to claim 25, wherein said phosphor screen comprises a binderless phosphor layer of needle-shaped CsBr:Eu crystals.

57. Method according to claim 29, wherein said phosphor screen comprises a binderless phosphor layer of needle-shaped CsBr:Eu crystals.

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58. Method according to claim 40, wherein said phosphor screen comprises a binderless phosphor layer of needle-shaped CsBr:Eu crystals.

5 59. Method according to claim 41, wherein said phosphor screen comprises a binderless phosphor layer of needle-shaped CsBr:Eu crystals.

60. Method according to claim 42, wherein said phosphor screen comprises a binderless phosphor layer of needle-shaped CsBr:Eu crystals.

10 61. Method according to claim 43, wherein said phosphor screen comprises a binderless phosphor layer of needle-shaped CsBr:Eu crystals.